Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act	)	GN Docket No. 16-245

To: The Commission

COMMENTS OF CTIA

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I. INTRODUCTION AND SUMMARY.

CTIA[1] respectfully submits these comments on the Commission's Twelfth Broadband Progress Notice of Inquiry[2] (NOI) in the above-captioned proceeding. In this NOI, the FCC seeks comment on whether advanced telecommunications services have been deployed in the United States on a reasonable and timely basis. A careful examination of the facts, whether

[1] CTIA® represents the U.S. wireless communications industry. With members from wireless carriers and their suppliers to providers and manufacturers of wireless data services and products, the association brings together a dynamic group of companies that enable consumers to lead a 21st century connected life. CTIA members benefit from its vigorous advocacy at all levels of government for policies that foster the continued innovation, investment and economic impact of America's competitive and world-leading mobile ecosystem. The association also coordinates the industry's voluntary best practices and initiatives and convenes the industry's leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

[2] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, Twelfth Broadband Progress Notice of Inquiry, GN Docket No. 16-245, FCC 16-100 (rel. Aug. 4, 2016) (NOI).

deployment, investment, adoption, or usage, reveals that not only is mobile broadband deployment in the U.S. reasonable and timely, but it leads the world. Indeed, the U.S. remains at the head of the class in technology and spectrum innovation.[3] As the Obama Administration itself has observed, U.S. providers met the President's challenge to deploy 4G technology to 98 percent of Americans "nearly two years ahead of schedule."[4] In fact, according to FCC data, 99.6 percent of Americans had access to 4G LTE service from at least one provider as of July 2015.[5]

For these reasons and as discussed in more detail below, the Commission must find that, under any reasonable metric, mobile broadband deployment is reasonable and timely. To maintain U.S. global leadership and meet consumer demand, however, there are specific actions that the Commission should take, including:

- Facilitating the auction and timely deployment of low-, mid-, and high-band spectrum for use by 4G LTE and 5G technologies;
- Reducing barriers to deploying crucial wireless network infrastructure, particularly those small cell facilities that will be needed to deploy the next generation of wireless networks;

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[3] *Year-End 2014: Nearly Half a Billion LTE Connections WorldWide, 4G Americas reports substantial gains for LTE in North America*, 4G Americas (Mar. 11, 2015), http://www.4gamericas.org/en/newsroom/press-releases/year-end-2014-nearly-half-billion-lte-connections-worldwide. *See also 1Q 2016: North America Posts Quarter of a Billion LTE Connections; Latin America a Top Growth Market for LTE*, 5G Americas (Jun3 13, 2016), http://www.4gamericas.org/en/newsroom/press-releases/1q-2016-north-america-posts-quarter-billion-lte-connections/#sthash.CExV0J74.dpuf.

[4] White House, Office of the Press Secretary, *Fact Sheet: Next Steps in Delivering Fast Affordable Broadband* (Mar. 23, 2015), https://www.whitehouse.gov/the-press-office/2015/03/23/fact-sheet-next-steps-delivering-fast-affordable-broadband.

[5] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, 30 FCC Rcd 1375 ¶ 109 (2015) (2015 Broadband Progress Report), https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-10A1.pdf.

- Refraining from adopting privacy rules that create disparate treatment of Internet Service Providers (ISPs) and policies that restrict innovative data service offerings intended to further mobile broadband adoption and meet consumer demand, and

- Fulfilling the commitment to offer at least $500 million annually to support the availability of mobile wireless services in rural areas through a permanent Mobility Fund.

II. BY ANY MEASURE, MOBILE WIRELESS BROADBAND DEPLOYMENT IS REASONABLE AND TIMELY.

U.S. wireless carriers' unparalleled investments in mobile broadband networks, as well as American consumers' global leadership in mobile wireless broadband adoption and usage, clearly indicate that mobile wireless broadband has been deployed in a reasonable and timely manner.

A. U.S. Wireless Broadband Continues to Show Spectacular Growth Through Expanding Deployment, Rising Consumer Adoption, and Increased Usage.

1. Deployment and Network Investment.

By virtually any metric, the United States is at the vanguard of 4G LTE network deployment. Mobile wireless service providers have invested unprecedented resources into promptly deploying 4G LTE service to most of America's consumers, and continue to extend coverage. For example, AT&T reports that over 317 million people are covered by their 4G LTE network, while Sprint reports that their LTE coverage reaches approximately 300 million people.[6] Verizon reports that 312 million people are covered across the U.S. by their 4G LTE network.[7] T-Mobile achieved their 2015 goal of covering 300 million POPs with 4G LTE ahead

[6] AT&T has the nation's largest network, AT&T, https://www.att.com/network/en/index.html; *see also* Sprint, Sprint and Samsung Take Three-Channel Carrier Aggregation into the Field with Live Demonstration in Chicago (Aug. 29, 2016).

[7] A Leader in 4G LTE, Verizon, www.verizonwireless.com/news/LTE/Overview.html.

of schedule, and recently reported that they now cover over 311 million POPs with LTE.[8] U.S. Cellular, as of February 2016, had deployed LTE to cover 99 percent of their customers.[9] Even though, according to Commission data, only 67.5 percent of the U.S. population had access to LTE in 2013, 99.6 percent of Americans had access to 4G LTE service from at least one provider as of July 2015.[10]

Moreover, the Commission's most recent Mobile Competition Report further confirms that this expansive mobile market is competitive for virtually all American consumers. Nearly 98 percent of the population has a choice of two or more LTE-based providers and, significantly, 82.2 percent of the U.S. population can choose from among four or more providers.[11] Fifty-four operators currently offer commercial LTE across the country.[12] Indeed, as Bill Rogerson, former FCC Chief Economist recently noted, "[t]he mobile broadband industry exhibits high levels of

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[8] *See* Marguerite Reardon, *T-Mobile Doubles 4G Coverage to Take on AT&T and Verizon*, CNET (Oct. 28, 2015), http://www.cnet.com/news/t-mobile-doubles-4g-coverage-to-take-on-at-t-and-verizon. See also *T-Mobile Turns Up the Bay Area With Extended Range LTE*, Aug. 4, 2016, https://newsroom.t-mobile.com/news-and-blogs/t-mobile-turns-up-the-bay-area-with-extended-range-lte.htm.

[9] *See* Kelly Cioe, *U.S. Cellular Adds New Cell Site to Increase Wireless Network Coverage in Harrington*, Bangor Daily News, Aug. 3, 2016, http://bangordailynews.com/community/u-s-cellular-adds-new-cell-site-to-increase-wireless-network-coverage-in-harrington/.

[10] *See supra n. 6 and infra* Section III.B. *Compare* GSMA, *The Mobile Economy 2015* at 12, GSMA Intelligence (Feb. 22, 2015), http://www.gsma.com/mobileeconomy/global/2015/ (*2015 GSMA Report*) (only 63 percent of the U.S. population has access to LTE). Although the deployment of 4G LTE service is reasonable and timely, there is no economic case to provide service in some rural and remote areas, and a robust Mobility Fund Phase II is necessary to ensure service to these areas.

[11] *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Eighteenth Report, 30 FCC Rcd 14515 ¶ 38 (WTB 2015) (Eighteenth Report).

[12] 4G Americas LTE Deployment Status Update, North America—USA/Canada, Sept. 1, 2015, http://www.4gamericas.org/files/7214/4112/1452/North_America_9.1.15.pdf.

competition with four established and financially healthy firms locked in head-to-head competition with one another over price levels, pricing structure, and the quality and variety of services they offer."[13] In addition, as the then-Assistant Attorney General for the Department of Justice William Baer observed: "[T]he market is thriving and consumers are benefiting from the … competitive dynamic."[14]

Regional and national providers have been putting their resources to good use, building out LTE coverage throughout the U.S., including adopting programs targeted at expanding coverage in rural areas. Verizon's LTE in Rural America Program, launched in 2010, now covers more than 2.7 million people in rural communities, more than 225,000 square miles, and more than 1,000 cell sites with live 4G LTE networks.[15] All 21 original participants in Verizon's LTE program have launched 4G LTE service.[16] Bluegrass Cellular, one of Verizon's program participants, completed construction of an LTE build-out that serves 10,300 square miles,

[13] Prof. William P. Rogerson, *The Economics of Data Caps and Free Data Services in Mobile Broadband* (2016), http://www.ctia.org/docs/default-source/default-document-library/081716-rogerson-free-data-white-paper.pdf.

[14] Edward Wyatt, *Wireless Mergers Will Draw Scrutiny, Antitrust Chief Says*, N.Y. Times (Jan. 30, 2014), http://dealbook.nytimes.com/2014/01/30/wireless-mergers-will-draw-scrutiny-antitrust-chief-says.

[15] Dan Meyer, *Verizon LTE in Rural America service launched by all 21 partners*, RCRWireless News (Oct. 15, 2015), http://www.rcrwireless.com/20151015/carriers/verizon-lte-partnership-with-rural-carriers-hits-milestone-tag2; *see also* Joan Engebretson, *Bluegrass LTE Network Completion Shows Power of Verizon Rural LTE Program*, Telecompetitor (Dec. 2, 2015) (*Bluegrass LTE Completion*), http://www.telecompetitor.com/bluegrass-lte-network-completion-shows-power-of-verizon-rural-lte-program/.

[16] Phil Goldstein, *Verizon: All 21 LTE in Rural America Carrier Partners Have Launched Service*, FierceWireless (Oct. 15, 2015), http://www.fiercewireless.com/wireless/verizon-all-21-lte-rural-america-carrier-partners-have-launched-service.

employs 115 LTE cell sites, and covers 732,000 POPs.[17] T-Mobile is also expanding into new rural areas, in addition to continuing its program to provide rural and regional carriers with spectrum resources to build out 4G LTE networks.[18] Sprint's Rural Roaming Preferred Providers program encompasses 30 carriers, 27 states, over 565,000 square miles, and a population of more than 38 million people.[19] Additionally, for over two years, Sprint has been sharing spectrum and other resources with rural providers to enable them to build out 4G LTE to rural populations as part of the Small Market Alliance for Rural Transformation.[20] AT&T, whose 4G LTE network covers more than 317 million people, recently expanded its 4G LTE network coverage in parts of Indiana, Kentucky, and Virginia.[21] While expanding the coverage

[17] Bluegrass Cellular 4GLTE Expansion Complete, (Dec. 1, 2015), https://bluegrasscellular.com/about/news/bluegrass-cellular-4g-lte-expansion-complete.

[18] Reardon at 1 (T-Mobile is "putting LTE into and onto rural ground and turf in brand new markets."); Kirsten Silven, *T-Mobile Strives to Improve Coverage Among Smaller and Rural Carriers*, Inquisitr (Aug. 29, 2015), http://www.inquisitr.com/2377295/t-mobile-strives-to-improve-coverage-among-smaller-and-rural-carriers/ ("T-Mobile joined the Competitive Carrier Association Data Services Hub to work with 12 other rural and regional carriers in order to "expand data and voice roaming capabilities across each other's regions.").

[19] Eric M. Zeman, *Sprint Partners Making Headway in Rural LTE Push*, Phone Scoop (May 21, 2015), http://www.phonescoop.com/articles/article.php?a=15828; *Sprint Reaches 4G LTE Roaming Agreements with 15 Additional Rural Carriers*, Sprint (Sept. 5, 2014), http://newsroom.sprint.com/news-releases/sprint-reaches-4g-lte-roaming-agreements-with-15-additional-rural-carriers.htm.

[20] *NetAmerica Alliance Adds Partners As SMART Forges Ahead*, NetAmerica Alliance (Sept. 8, 2014), http://www.netamericaalliance.com/news-events/press-releases/103-netamerica-alliance-adds-partners-as-smart-forges-ahead.

[21] *See* Travis Thayer, *AT&T Upgrades, Enhances 4G LTE Service in Batesville*, EagleCountryOnline.com, http://eaglecountryonline.com/local-article/att-upgrades-enhances-4g-lte-service-batesville/ (last visited Aug. 29, 2016); *AT&T Expands 4G LTE Service in Brown County*, WBIW.com (Feb. 16, 2016), http://www.wbiw.com/local/archive/2016/02/att-expands-4g-lte-service-in-brown-county.php; *AT&T Expands High Speed Internet at More than 200 Locations in KY; Governor Lauds Expanded Access*, NKy Tribune (Oct. 1, 2015), http://www.nkytribune.com/2015/10/at-governor-lauds-expanded-accessibility; *AT&T Expands*

of 4G LTE networks has brought increasing mobile wireless broadband speeds and capacities to communities across the nation, as explained below, CTIA continues to believe that a robust and permanent Mobility Fund is necessary to ensure the most advanced mobile wireless broadband technologies are available in the highest cost areas of the U.S.

Carriers have also leveraged multiple spectrum bands to deliver unprecedented mobile wireless performance for consumers throughout the U.S. Sprint, through its tri-band "LTE Plus" network, can deliver speeds in excess of 100 megabits per second (Mbps) in 237 markets across the country, including New York City, Chicago, Dallas, Houston, Denver, and Los Angeles.[22] In September 2015, AT&T began deploying 2.3 GHz WCS Band spectrum for LTE.[23] Verizon's LTE Advanced network will deliver faster peak data speeds and double the bandwidth to 4G LTE customers in over 461 markets.[24]

These spectacular advances in mobile broadband technology and deployment are possible only because of the huge capital investments that U.S. mobile wireless carriers have

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4G Network in Waynesboro, Staunton, Augusta County, Augusta Free Press (June 4, 2015), http://augustafreepress.com/att-expands-4g-network-in-waynesboro-staunton-augusta-county.

[22] Press Release, Sprint, Sprint and Samsung Take Three-Channel Carrier Aggregation into the Field with Live Demonstration in Chicago (Aug. 29, 2016), http://www.businesswire.com/news/home/20160829005676/en/; see also Colin Gibbs, *Sprint's 'LTE Plus' Network Now Reaches 191 Markets Including New York*, FierceWireless (Apr. 15, 2016), http://www.fiercewireless.com/story/sprints-lte-plus-network-now-reaches-191-markets-including-new-york/2016-04-15; Dan Meyer, *Sprint LTE Plus Advances Hit 77 Markets*, RCR Wireless News (Nov. 17, 2015), http://www.rcrwireless.com/20151117/carriers/sprint-lte-plus-advances-hit-77-markets-tag2.

[23] *See* Phil Goldstein, *AT&T Begins Deploying 2.3 GHz WCS Spectrum for LTE*, FierceWireless (Sept. 9, 2015), http://www.fiercewireless.com/story/att-begins-deploying-23-ghz-wcs-spectrum-lte/2015-09-09.

[24] *See* Mobile users in 461 cities today get 50% faster peak speeds at no extra cost. Introducing Verizon LTE Advanced, Verizon (Aug. 29, 2016), http://www.multivu.com/players/English/7814954-verizon-lte-advanced-network/.

made into their networks to develop the next generation of mobile services.[25] In 2015, the wireless industry paid the U.S. Treasury more than $41 billion for the right to use spectrum and it is now investing even more to deploy infrastructure to use on these newly available bands.[26] U.S. operators further invested almost $100 per person ($86 per subscriber connection) in 2015, more than the per-person mobile capital expenditures (CAPEX) invested by operators in South Korea and the EU5 (France, Germany, Italy, Spain, and United Kingdom).[27] Indeed, wireless providers' cumulative capital investment exceeded $462 billion in nominal dollars at the end of 2015 (or $558 billion if converted to constant 2016 dollars), and incremental CAPEX totaled almost $32 billion.[28] For example, Verizon Wireless invested $11.7 billion in its network in 2015, up 11.5 percent from 2014,[29] and AT&T reported full-year capital investment of $20.7 billion.[30] Sprint invested over $4.5 billion in its network during fiscal year 2015 (ending March

[25] *Eighteenth Report* ¶ 105 ("Mobile wireless service providers also compete for customers on dimensions other than price, including investment, capacity, network coverage and technology, service quality, and advertising and marketing.").

[26] *See* FCC, *Fiscal Year 2017 Budget Estimates to Congress* at 33, 36, Feb. 2016, https://apps.fcc.gov/edocs_public/attachmatch/DOC-337668A2.pdf.

[27] Qualcomm, *Europe has an opportunity to catch up on the mobile front*, OnQ Blog (Nov. 24, 2015), https://www.qualcomm.com/news/onq/2015/11/24/europe-has-opportunity-catch-mobile-front. See also Robert Roche & Kathryn Malarkey, *CTIA's Wireless Industry Indices Report* (July 2016) (*CTIA Wireless Industry Indices Report*), at 70.

[28] *Id.*

[29] *Verizon caps transformational year with strong, balanced 4Q results*, FierceTelecom (Jan. 21, 2016), http://www.fiercetelecom.com/press-releases/verizon-caps-transformational-year-strong-balanced-4q-results.

[30] Press Release, AT&T, "AT&T Caps Strong Year with 2.8 Million Wireless Net Adds and Double-Digit Growth in Revenues, Adjusted Operating Margin, Adjusted EPS and Free Cash Flow in Fourth Quarter" (Jan. 26, 2016), http://about.att.com/story/att_fourth_quarter_earnings_2015.html.

31, 2016).[31] Verizon reported wireless capital expenditures of $2.2 billion in the first quarter of 2016,[32] and T-Mobile is on track to invest $5 billion in capital expenditures in 2016 building out 4G LTE.[33] Regional wireless operator Shenandoah Telecommunications announced that it would invest $350 million to build-out 4G LTE in seven states.[34]

By itself, the network and investment data presented above should demonstrate to the Commission that mobile wireless broadband is being deployed not just on a reasonable and timely basis, but on a remarkable and expedited basis. The following sections provide further evidence of reasonable and timely deployment of mobile wireless broadband from a consumer perspective.[35]

2. Adoption.

Irrespective of the data set considered,[36] U.S. wireless subscribership continues to grow at an incredible pace as the number of wireless connections easily exceeds the population of the

[31] Press Release, Sprint, "Sprint Finishes Fiscal Year 2015 by Generating Positive Annual Operating Income for the First Time in Nine Years and Delivering More Postpaid Phone Net Additions Than Verizon and AT&T for the First Time on Record in the Fiscal Fourth Quarter" (May 3, 2016), http://investors.sprint.com/news-and-events/press-releases/press-release-details/2016/Sprint-Finishes-Fiscal-Year-2015-by-Generating-Positive-Annual-Operating-Income-for-the-First-Time-in-Nine-Years-and-Delivering-More-Postpaid-Phone-Net-Additions-Than-Verizon-and-ATT-for-the-First-Time-on-Record-in-the-Fiscal-Fourth-Quarter/default.aspx.

[32] Verizon Communications, *Investor Quarterly 1Q 2016* at 6 (Apr. 21, 2016).

[33] *See* Colin Gibbs, *T-Mobile, AT&T and Verizon Maintain Capex Spending Despite Incentive Auction*, FierceWireless (Apr. 27, 2016), http://www.fiercewireless.com/story/t-mobile-att-and-verizon-maintain-capex-spending-despite-incentive-auction/2016-04-27.

[34] *See* Colin Gibbs, *Shentel Closes $640M nTelos Acquisition, Commits $350M to Upgrade to LTE*, FierceWireless, May 9, 2016, http://www.fiercewireless.com/story/shentel-closes-640m-ntelos-acquisition-commits-350m-upgrade-lte/2016-05-09.

[35] *See* NOI ¶¶ 73-80.

[36] *See* NOI ¶ 80.

country. As of 2015, the 326 million people in the United States subscribed to 377.9 million wireless connections, up more than 6 percent from the previous year.[37]

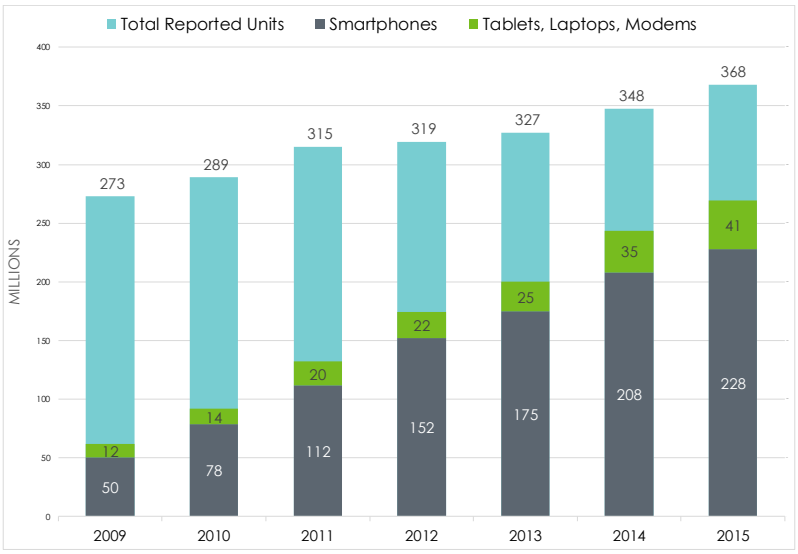
Wireless connections are also consumers' first choice to access the Internet. According to the CTIA Annual Survey, as of 2015, there were 291 million active Internet-capable devices in the U.S., up from 270 million at the end of 2014.[38] Of those, 228 million—over 78 percent—were smartphones, up from 208 million at the end of 2014.[39] Of course, consumer use of wireless devices does not end with smartphones: six million tablets, laptops, and wireless broadband modems were added to wireless networks in 2015, bringing the total number of these smart devices to 41 million by the end of that year.[40]

[37] Jacob Poushter, *Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies*, Pew Research Ctr. (Feb. 22, 2016), http://www.pewglobal.org/files/2016/02/pew_research_center_global_technology_report_final_february_22__2016.pdf (*2016 Pew Report)*.

[38] *CTIA Wireless Industry Indices Report*, at 11-12.

[39] *CTIA Annual Survey Report*, CTIA 11 (May 23, 2016), http://www.ctia.org/docs/default-source/default-document-library/ctia-survey-2015.pdf (*CTIA Annual Survey*) at 4.

[40] *Id.* (finding that the number of active wireless-enabled tablets, laptops, netbooks, and wireless broadband modems reported on carriers' networks at year-end 2015 was 41 million, up from 35.4 million in 2014).



Source: Background on CTIA's Wireless Industry Survey (May 2016).

3. Data Usage.

The United States leads the world in the amount of data consumed over mobile networks. According to the CTIA Annual Survey, U.S. mobile data traffic in 2015 was 749 petabytes per month, a 137 percent increase over 2014's reported traffic.[41] By 2020, the volume is projected to be six times the volume in 2015, which would make the volume in 2020 150 times the volume in 2010. Reports also show that Americans spend more of their time on mobile devices consuming digital media (about 62 percent) than on wireline devices (about 38 percent).[42]

In the past year, North American users consumed more data per subscriber per month than users in any other geographic area in the world, and North Americans' ravenous mobile data

[41] CTIA, *Americans' Data Usage More Than Doubled in 2015* (May 23, 2016), http://www.ctia.org/resource-library/press-releases/archive/americans-data-usage-more-than-doubled-in-2015.

[42] White Paper, *The 2015 U.S. Mobile App Report*, comScore (Sept. 22, 2015), https://www.comscore.com/Insights/Presentations-and-Whitepapers/2015/The-2015-US-Mobile-App-Report at 5.

consumption is expected to continue into the future.[43] Studies estimated that the average North American user consumed between 3.8-4.4 gigabytes of data per month in 2015, compared with just 350 megabytes each month in 2010.[44] Based on the 2015 numbers, that would equal a consumer listening to between 45 and 52.5 hours of music a month. By 2021, estimates predict that the average subscriber in North America will likely consume approximately 22 gigabytes of mobile data per month, whereas it is estimated that the average subscriber in Western Europe will consume approximately 18 gigabytes of mobile data per month.[45]

The increasing demand for data has brought more innovation in data plan offerings, which has made broadband more affordable for all Americans. One significant trend in the last year has been the introduction of free data plans offering access to targeted bundles of content that do not count against a customer's allocation of data. Consumers have enthusiastically embraced these "free data" programs, with 84 percent of U.S. wireless customers surveyed saying they would try a new online service if it was a part of a free data program.[46] Millennials from 18-34 years of age were also nearly unanimous in their support for such innovative free

[43] *2016 GSMA Report* at 15.

[44] *Compare* White Paper, *Ericsson Mobility Report: On the Pulse of the Networked Society*, Ericsson 2 (Nov. 2015), https://www.ericsson.com/res/docs/2015/mobility-report/ericsson-mobility-report-nov-2015.pdf(*2015 Ericsson White Paper*) (3.8 gigabits per month) *with 2016 GSMA Report* at 15 (4.4 gigabits per month).

[45] *2016 GSMA Report* at 15-16; *see also* White Paper, *Ericsson Mobility Report: Regional Report—Europe* (Nov. 2015), http://www.ericsson.com/mobility-report.

[46] *See* Press Release, T-Mobile, "T-Mobile's BingeOn Brings More Cowbell: Now Over 80 Video Services Stream Free Without Using Your Data" (May 17, 2016), https://newsroom.t-mobile.com/news-and-blogs/binge-on-adds-more-cowbell.htm; Dr. Robert Roche, *Americans Love #FreeData*, CTIA Blog (Apr. 7, 2016), http://www.ctialatest.org/2016/04/07/americans-love-freedata.

data offerings. Former FCC Chief Economist William Rogerson has analyzed these programs and concluded that they create significant benefits for consumers.[47]

Free data services also provide more mobile wireless data for "smartphone-only" low-income Americans that can be used for occupational, community engagement, and educational opportunities. For 15 percent of all Americans, smartphones are the primary option for getting online.[48] Twelve percent of all African Americans and 13 percent of Latinos rely on smartphone-only connectivity for home Internet, compared with only four percent of Caucasians.[49] And the number of smartphone-only minority consumers will likely continue to increase.[50] As the Multicultural Media, Telecom and Internet Council (MMTC) has argued, free data offerings hold enormous potential to help close the digital divide and bring more people—

[47] Prof. William P. Rogerson, *The Economics of Data Caps and Free Data Services in Mobile Broadband* (2016), http://www.ctia.org/docs/default-source/default-document-library/081716-rogerson-free-data-white-paper.pdf.

[48] *U.S. Smartphone Use in 2015*, Pew Research Ctr. (Apr. 1, 2015), http://pewinternet.org/files/2015/03/PI_Smartphones_0401151.pdf.

[49] John B. Horrigan & Maeve Duggan, *Home Broadband 2015: The share of Americans with broadband at home has plateaued, and more rely on their smartphones for online access*, Pew Research Ctr. (Dec. 21, 2015), http://pewinternet.org/files/2015/12/Broadband-adoption-full.pdf.

[50] *Id.*

especially people of color—online;[51] bolster the uses and experiences of those who rely on mobile broadband connections; encourage more mobile broadband business model experimentation; support robust and vibrant innovation in the mobile ecosystem for services that may be critical, time-sensitive, or life-enhancing;[52] and empower mobile customers by giving them greater opportunities to explore their other needs in the digital space, such as locating jobs and healthcare information, without exceeding their data limits.[53] In the words of MMTC, "free data can and should play a key role in finally making progress toward universal first-class digital citizenship for every American."[54] The dynamic innovation of these "free data" options, the rapid proliferation of varied offerings, and the favorable consumer responses should be signals to the FCC that these programs are strongly in the public interest.

In addition to free targeted bundles of data, carriers also are providing increased flexibility in their plan offerings, shared data plans, and plans with rollover policies for customer

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[51] *Understanding and Appreciating Zero-Rating: The Use and Impact of Free Data in the Mobile Broadband Sector*, Multicultural Media, Telecom & Internet Council (MMTC) at 10 (May 9, 2016), http://mmtconline.org/WhitePapers/MMTC_Zero_Rating_Impact_on_Consumers_May2016.pdf (*MMTC White Paper*) ("Broadband adoption has long lagged among African Americans and Hispanics. The ability to stream as much video and music content as possible—activities that are among the most popular wireless uses across every user group—could become an enticing on-ramp for non-users: if they come to wireless broadband for unlimited Netflix streaming, they may very well stay online and use their connections for additional, more meaningful uses. For those who perceive broadband of any kind—wired or wireless—to be too expensive, the promise of free data could allow them to purchase more basic plans with lower data caps, which would deliver significant monthly cost savings.").

[52] *Id.* at 12 ("For example, zero-rating certain health-related mobile tools could prove enormously beneficial for African Americans, who, as a group, are more likely to develop chronic diseases such as diabetes and heart disease. …[W]hen treated in a preventative and real-time manner, there is evidence to suggest that health outcomes in these communities [will] improve...").

[53] *MMTC White Paper* at 9.

[54] *Id.* at 14.

data use.[55] Unlimited data plans are reentering the wireless marketplace as carriers find creative ways to manage network capacity constraints. Just last month, Sprint and T-Mobile released new unlimited data plans for customers.[56] And in January 2016, AT&T announced an unlimited cellphone data plan for customers who subscribe to DirecTV or AT&T's IPTV service, U-verse.[57] Moreover, carriers are also expanding data-only plan offerings.[58] Historically, such plans were marketed to deaf and hearing or speech-impaired customers who did not want or need voice service;[59] now, these plans offer more flexibility for data-hungry consumers who may not want traditional voice and text services for their wireless devices.[60] In short, as MMTC observed, the "one-size-fits-all plans based around unlimited offerings of talk, text, and/or data have been replaced with a menu of options from which consumers can choose the components and price points that match their needs."[61]

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[55] *See 2015 Ericsson White Paper* at 18.

[56] Aaron Pressman, *Here's How Sprint and T-Mobile are Battling with New Unlimited Data Plans*, FORTUNE (Aug. 18, 2016), http://fortune.com/2016/08/18/sprint-tmobile-unlimited-data/.

[57] Tali Arbel, *Are Unlimited Data Cellphone Plans on Their Way Back?*, Phys Org (Jan. 11, 2016), http://phys.org/news/2016-01-unlimited-cellphone.html.

[58] Christine Torralba, *T-Mobile Quietly Introduces Data-only Wireless Plans Without Voice Call Inclusions*, TmoNews (Mar. 30, 2016), http://www.tmonews.com/2016/03/t-mobile-quietly-introduces-data-only-wireless-plans-without-voice-call-inclusions.

[59] *See, e.g.*, Lance Whitney, *A Phone Plan Without Phone Calls? T-Mobile's Got One*, CNET (Mar. 29, 2016), http://www.cnet.com/news/a-phone-plan-without-phone-calls-t-mobiles-got-one.

[60] *See, e.g.*, *id.*; Dan Seifert, *Charge adds voice and text options to its data-only plans*, The Verge (May 11, 2016), http://www.theverge.com/2016/5/11/11653864/charge-voice-text-smartphone-plans; Diana Goovaerts, *Could Millennials Bring Cord Cutting to Wireless?*, Wireless Week (May 3, 2016), http://www.wirelessweek.com/blog/2016/05/could-millennials-bring-cord-cutting-wireless.

[61] *MMTC White Paper* at 5.

The high speeds and low latency promised by 5G will only increase consumer demand for data. Such demands will put a premium on continued innovation from wireless carriers to offer data plans that simultaneously manage network capacity constraints and provide optimal experiences for consumers. The FCC's policies should continue to embrace this dynamic market and recognize that nationwide mobile deployment has been both reasonable and timely.

4. Functionality.

American consumers can now do more with wireless broadband than ever before. On-demand video, real-time communications, mobile banking, and location-based services represent just a small subset of the functionalities used by Americans. Indeed, as a result of the prevalence and quality of mobile broadband in the U.S., Americans are increasingly using advanced mobile broadband capabilities to access the same applications that they access on wireline services, especially for voice, data, graphics, and video services.[62]

In February, Cisco reported that video was 61 percent of all mobile data traffic in 2015, and that video will be 77 percent of the United States' mobile data traffic by 2020.[63] Mobile device viewing averaged about 2.8 hours a day in 2015, compared to only 2.4 hours per day for

[62] As to data and graphics, the Commission itself points out that "[m]obile broadband has become increasingly important for accessing websites, navigating during travel, connecting on social media, communicating with family and friends, receiving timely news updates, and obtaining entertainment." NOI ¶¶ 8, 35.

[63] *See* Cisco, VNI Mobile Forecast Highlights, 2015-2020 (United States—Mobile Applications), http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country; *see also* Thomas K. Sawanobori & Dr. Robert Roche, CTIA, *Mobile Data Demand: Growth Forecasts Met* 4, June 22, 2015 (*Mobile Data Demand: Growth Forecasts Met*), http://www.ctia.org/docs/default-source/default-document-library/062115mobile-data-demandswhite-paper.pdf at 5.

desktop computers.[64] YouTube now reaches more of the 18-49 year-old demographic via mobile devices alone than any cable television network across all platforms.[65] The percentage of smartphone users that watched movies or television content on their smartphones through a subscription service like Netflix, Amazon Prime, or Hulu more than doubled from 15 percent in 2012 to 33 percent in 2015.[66]

More and more people are also using wireless devices for real-time applications such as video/voice chat, streaming radio, and live gaming. The percentage of smartphone users over the age of 18 who used their smartphone for a video call or chat increased from 33 percent in 2013 to 47 percent in 2015.[67] Use of wireless connections for streaming music on applications like Pandora or Spotify also increased, from 53 percent of smartphone users over 18 years old in 2012, to 67 percent of smartphone users over 18 in 2015.[68]

The number and diversity of messaging applications for wireless devices also continues to increase. Users can message over their wireless connections using applications like Google's Hangouts or WhatsApp. Businesses, too, are adopting wireless messaging systems in place of traditional email or messaging systems. For instance, Slack, a business-focused hybrid e-mail and messaging application that launched in 2014, rapidly gained 2.3 million active users and, as

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[64] Mary Meeker, Internet Trends 2015—Code Conference, KPCB at 24 (May 27, 2015), http://www.kpcb.com/internet-trends; *see also Mobile Data Demand: Growth Forecasts Met* at 5.

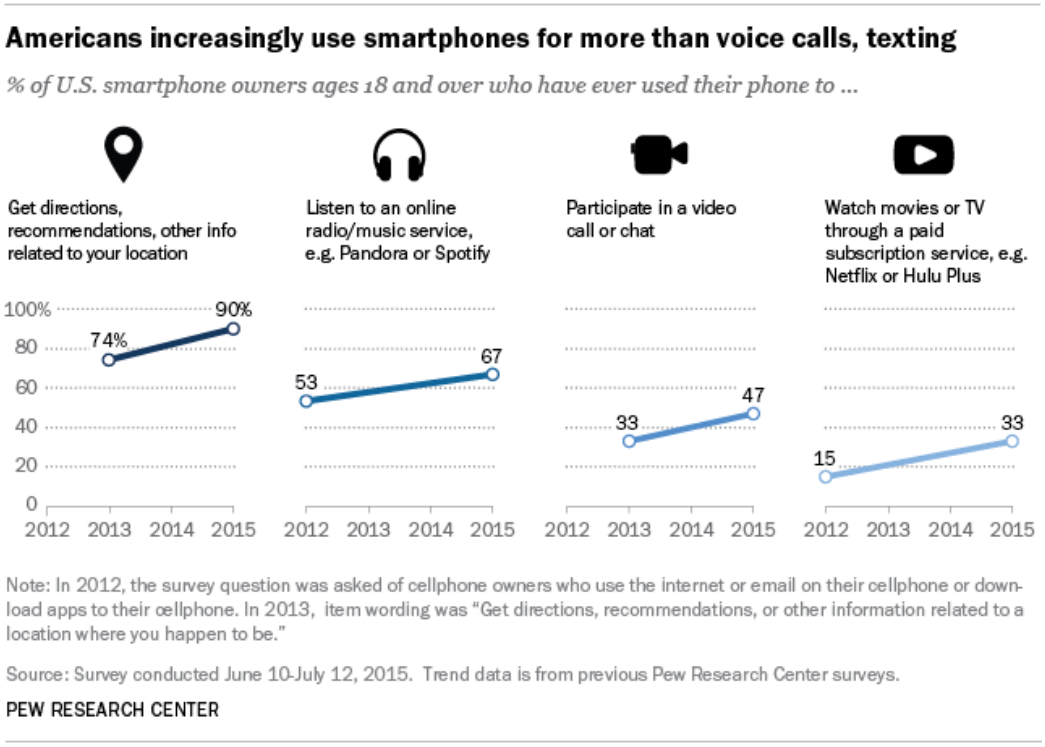
[65] *Statistics*, YouTube, https://www.youtube.com/yt/press/en-GB/statistics.html (last visited Aug. 29, 2016).

[66] *Americans Increasingly Use Smartphones for More Than Voice Calls, Texting*, Pew Research Ctr. (Jan. 29, 2016), http://www.pewresearch.org/fact-tank/2016/01/29/us-smartphone-use/ft_01-27-16_smartphoneactivities_640.

[67] *Id*.

[68] *Id*.

of March 2016, was valued at $2.8 billion.[69] These over-the-top (OTT) messaging services are fast outpacing traditional SMS messaging and fostering more competition in the messaging space. Nevertheless, while the use of traditional SMS messaging has declined since 2012,[70] consumers are using their mobile devices more than ever, and messaging (whether traditional SMS, MMS, or OTT) continues to be a large part of that equation.



Mobile payment options are also continuing to grow in number and use. The total value of mobile payment transactions is expected to grow by 210 percent in 2016, from $8.71 billion in

[69] Sean Captain, *Slacklash: Group Messaging Apps Are Stressing Some People Out*, Fast Company (Mar. 17, 2016), http://www.fastcompany.com/3057730/slacklash-group-messaging-apps-are-stressing-some-people-out.

[70] *See, e.g.*, Brian X. Chen, *Text Messaging Declines in U.S. for First Time, Report Says*, N.Y. Times (Nov. 12, 2012), http://bits.blogs.nytimes.com/2012/11/12/text-messaging-declines-united-states.

2015 to $27.05 billion.[71] In addition to the current options in the market, including Samsung Pay, Apple Pay, and Google Wallet, 2015 saw the emergence of new partnerships and the launch of new options for mobile payments. Proof of the firm foundation that mobile payment programs have achieved in the U.S. is the fact that they are now expanding internationally. At the end of 2015, for example, Apple Pay and American Express announced a partnership allowing Apple Pay's footprint to expand internationally.[72] A Gartner study at the end of 2015 predicted that by 2018 half of adults in mature markets will use smartphones or wearable devices to make mobile payments.[73]

The deployment of 5G technologies is poised to add even more functionality to wireless connectivity. 5G networks will build upon the success of previous network iterations while allowing for new and innovative uses. 5G networks will serve as the foundation for the growing Internet of Things by providing the network capacity to allow billions of devices to connect and communicate with one another.[74] Moreover, 5G will also provide increased speed[75] at lower

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[71] Sarah Silbert, *How Mobile Payments Will Grow in 2016*, Fortune (Oct. 29, 2015), http://fortune.com/2015/10/29/mobile-payments-grow-2016.

[72] Leena Rao, *Apple Pay Partners with AmEx to Expand Internationally*, Fortune (Oct. 27, 2015), http://fortune.com/2015/10/27/apple-pay-amex-international.

[73] Press Release, Gartner, "Gartner Says by 2018, 50 Percent of Consumers in Mature Markets Will Use Smartphones or Wearables for Mobile Payments" (Dec. 15, 2015), http://www.gartner.com/newsroom/id/3178217.

[74] *See* Comments of Verizon, GN Docket No. 15-191 (filed Sept. 15, 2015), https://ecfsapi.fcc.gov/file/60001324109.pdf; Press Release, Verizon, "Verizon sets roadmap to 5G technology in U.S.; Field trials to start in 2016" (Sept. 8, 2015), http://www.verizon.com/about/news/verizon-sets-roadmap-5gtechnology-us-field-trials-start-2016 ("The expected benefits of 5G, as described during Verizon's inaugural forum, include about 50 times the throughput of current 4G LTE, latency in the single milliseconds, and the ability to handle exponentially more Internet-connected devices to accommodate the expected explosion of the Internet of Everything").

[75] *See, e.g.*, James Geddes, *Samsung Testing 5G Network with Lightning Speed Standards of 20 GB Per Second*, Tech Times (July 14, 2015),

latency rates than 4G LTE, supporting time-critical applications like collision avoidance systems in automobiles and remote medical services.[76]

By any measure, mobile wireless services and devices have quickly become central to Americans' daily lives as functionality increases as a result of the increasing availability of mobile wireless broadband services.

B. The U.S. Continues to Lead International Comparisons of Mobile Broadband Deployment.

As to how the U.S compares to other countries under Section 706,[77] North America remains the leading region in terms of 4G connections as a percentage of total connections in 2015.[78] Fifty-seven percent of all mobile subscriptions in North America—or 253 million connections—were LTE in March 2016.[79] In contrast, LTE connections in Western Europe and the Asia Pacific region represented only 26 and 33 percent of total connections respectively in those regions.[80] More than 80 percent of data traffic in the U.S. is LTE traffic,[81] compared to

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http://www.techtimes.com/articles/68237/20150714/samsung-testing-5g-network-with-lightning-speed-standards-of-20-gb-per-second.htm; Staff Reports, *AT&T Joins Verizon in Race to Develop Faster Wireless Networks with Austin Trials of 5G*, Dallas Morning News (Feb. 12, 2016), http://www.dallasnews.com/business/technology/headlines/20160212-att-joins-verizon-in-race-to-develop-faster-wireless-networks-with-5g.ece.

[76] Comments of CTIA, WT Docket No. 16-137 at 21 (filed May 31, 2016).

[77] NOI ¶ 81.

[78] David George et al., *The Mobile Economy 2016*, GSMA Intelligence 12 (Feb. 22, 2016), https://gsmaintelligence.com/research/?file=97928efe09cdba2864cdcf1ad1a2f58c&download (*2016 GSMA Report*).

[79] *Mobile Technology Statistics—Global*, 4G Americas, http://www.4gamericas.org/en/resources/statistics/statistics-global/ (last visited Aug. 29, 2016).

[80] *Id*.

[81] Cisco VNI Mobile Forecast Highlights, 2015-2020.

53.4 percent for Western Europe.[82] U.S. mobile end users generated an average of 2,245 MB of mobile data traffic per connection per month, compared to only 921 MB for Central and Eastern Europe, and 405 MB for the Asia-Pacific region.[83]

As of last year, smartphone adoption in North America was 74 percent, compared to 59 percent smartphone ownership in Western Europe.[84] The U.S. is expected to continue to lead in smartphone adoption in the future. North America is projected to have the largest smartphone saturation rate between now and 2020, at 95 percent,[85] whereas by the end of 2020, Western Europe will have 86 percent of its mobile subscriber base converted to smartphones.[86]

North America is thus at the vanguard of mobile broadband deployment as a clear global leader in LTE subscription, user traffic, and smart device saturation.

C. Specific Benchmarks Are Not Necessary for an Affirmative Finding Regarding Mobile Broadband, but U.S. Mobile Broadband Deployment Exceeds Any Rational Benchmark.

CTIA generally opposes the adoption of rigid speed benchmarks to measure mobile broadband deployment.[87] As the Commission noted in the NOI, "mobile transmissions are subject to environmental factors that fixed line transmissions do not encounter," and "encounter[] degrading effects from factors such as congestion, interference, and challenges

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[82] *Id*.

[83] *CTIA Wireless Industry Indices Report* at 98; Cisco VNI Mobile Forecast Highlights, 2015-2020.

[84] *2016 GSMA Report* at 14.

[85] 2020White Paper, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2015-2020*, Cisco 10 (Feb. 3, 2016), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.pdf (*Cisco White Paper*) at 10.

[86] *Id*.

[87] *See, e.g.*, Comments of CTIA, GN Docket No. 15-191 at 7-8 (filed Sept. 15, 2015).

presented by the physical velocity of a mobile antenna."[88] These and other factors make specific benchmarks particularly difficult to establish and measure in the mobile context.

Even if, however, the Commission chooses to measure mobile broadband against a 10 Mbps upload / 1 Mbps download speed (10/1) benchmark[89], it must conclude that deployment is reasonable and timely. Further, the other benchmarks proposed in the NOI, including latency, consistency and privacy issues, are irrelevant and unnecessary to determining the extent of nationwide mobile broadband deployment pursuant to Section 706.

[88] NOI ¶¶ 40, 43.

[89] As a point of reference in establishing a mobile broadband speed benchmark, the FCC should also consider that Congress set a minimum threshold for broadband transmission capacity in the context of rural areas at 4 Mbps downstream and 1 Mbps upstream. (*See* 7 U.S.C. § 950bb(e)(1) (providing that, subject to future adjustments via rulemaking by the Secretary of the Department of Agriculture, "the minimum acceptable level of broadband service for a rural area shall be at least [ ] a 4-Mbps downstream transmission capacity; and [ ] a 1-Mbps upstream transmission capacity")).

1. Mobile Broadband Deployment Is Reasonable and Timely Even If the Commission Adopts a 10/1 Benchmark.

While the FCC's Form 477 data collect only *minimum advertised* speeds,[90] which are typically well below actual network performance levels,[91] the Form 477 data demonstrate that a third of existing mobile broadband connections are delivering minimum advertised speeds of 10 Mbps and maximum advertised speeds even higher.[92] Another almost 20 percent of existing broadband connections are delivering minimum advertised speeds of at least 6 Mbps.[93] PC Magazine recently tested carrier networks and found that the four national carriers deliver average 4G speeds between 19 and 27 Mbps.[94] Broadband providers' cautious approach to reporting and disclosure should not undermine the real world performance delivered by providers' world-leading networks.

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[90] The Commission's Eighteenth Report on mobile competition cited Ookla data from June 2015 that showed all four of the nationwide operators' mean and median speeds for 4G LTE service exceeded the minimum speeds currently advertised by those operators. *See* Eighteenth Competition report at para. 129, Table VI.C.I. *See also* AT&T, Broadband Information, http://www.att.com/gen/public-affairs?pid=20879; Sprint, Your Plan Options, Speeds, http://shop.sprint.com/modals/4g_lte_plan_details.html?id16=LTE%20speed%20mbps%20%7CAll&question_box=LTE%20speed%20mbps%20%7CAll; T-Mobile, About T-Mobile, Speed, http://www.t-mobile.com/company/company-info/consumer/internet-services.html; and Verizon, 4G LTE speeds vs. your home network, https://www.verizonwireless.com/archive/mobile-living/network-and-plans/4g-lte-speeds-compared-to-home-network/.

[91] In previous Commission Broadband Progress Reports, the FCC has not limited its count to minimum advertised speeds, and doing so may exclude a significant number of mobile broadband connections that regularly exceed the 10/1 threshold.

[92] Internet Access Services: Status as of June 30, 2015, at 6, fig. 4(a) (WCB 2016).

[93] *Id.*

[94] Sascha Segan, *Fastest Mobile Networks 2016*, PC Magazine, (June 15, 2016), http://www.pcmag.com/article/345123/fastest-mobile-networks-2016/2.

Considering that providers only gained the technological capability to provide mobile wireless broadband at speeds approaching 10/1 with the advent of LTE a few years ago, the fact that most consumers have access to mobile wireless broadband at 10/1 speeds is remarkable on such an expedited basis. Thus, even if the Commission were to adopt a 10/1 benchmark, it must find that mobile broadband deployment has been reasonable and timely.

2. Latency and Consistency of Service Remain Impractical and Unnecessary as Benchmarks for Measuring Mobile Wireless Broadband Deployment.

As CTIA previously has argued, latency and consistency of service are challenging to measure in the mobile environment.[95] In addition, data is not available that adequately considers the impact of latency and consistency on the consumer mobile wireless broadband experience. Such metrics also would likely become rapidly obsolete as mobile networks evolve. Thus, the Commission should not adopt latency or consistency of service benchmarks for its Section 706 analysis.[96]

The applications that comprise the vast majority of all Internet traffic—namely, video streaming, downloading, and web browsing—are unaffected by latency, as the Commission is well aware.[97] At present, video streaming accounts for more than 60 percent of all peak

[95] *See* Comments of CTIA – The Wireless Association, GN Docket No. 15-191, at 7-8 (filed Sept. 15, 2015).

[96] NOI ¶¶ 44-48.

[97] *See 2015 Measuring Broadband in America: A Report on Consumer Fixed Broadband Performance in the United States*, FCC at 7 (2015) (2015 Measuring Broadband Report), http://data.fcc.gov/download/measuring-broadband-america/2015/2015-Fixed-Measuring-Broadband-America-Report.pdf (noting that "differences in average latencies across all technologies are unlikely to affect less interactive applications such as web browsing and video streaming"). "Highly interactive applications" include VoIP calls, video chat, and online multiplayer games. *Id.* at 18.

downstream traffic through fixed broadband in North America.[98] By 2020, video streaming and downloads are expected to grow to more than 80 percent of all consumer Internet traffic.[99] These uses of the Internet are not at all latency sensitive. As both the 2015 and the 2016 Broadband Progress Reports observe, "such differences in average latencies across all technologies are unlikely to affect less interactive applications such as web browsing and video streaming."[100]

Furthermore, the advertisements of the leading broadband providers invariably focus on speed and price, rather than metrics of limited value to consumers, such as latency.[101] Because of the minimal effect of latency on the majority of uses made by consumers with access to advanced telecommunications, it would seem premature for the Commission to adopt a latency standard for its Section 706 analysis.[102] If the Commission were to nevertheless adopt latency

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[98] *See* 2015 Measuring Broadband Report at 7 note 3.

[99] Cisco, Cisco Visual Networking Index: Forecast and Methodology 2015-2020 at 14, White Paper (June 1, 2016), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/complete-white-paper-c11-481360.pdf. *Accord. Connect America Fund; ETC Annual Reports and Certifications; Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) from Obsolete ILEC Regulatory Obligations that Inhibit Deployment of Next-Generation Networks*, Report and Order, 29 FCC Rcd 15644 ¶ 23 (2014) ("We expect carriers planning upgrades to their networks today would take into account near term and future consumer demand.").

[100] 2015 Measuring Broadband Report at 7; *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 15-191, 2016 Broadband Progress Report, 31 FCC Rcd 699 ¶ 108 (2016) (2016 Broadband Progress Report).

[101] *See, e.g.*, Pick Your FIOS Home Internet Plan, Verizon, http://www.verizon.com/home/fios-fastest-internet/#plans (last visited Aug. 29, 2016) (listing Verizon FIOS plans and emphasizing, in bold type, speeds and prices associated with each offering).

[102] NOI ¶¶ 26-36.

and consistency requirements, it should not depend on the incomplete data obtained through the Measuring Mobile Broadband America (MMBA) program for reasons that are addressed below.

3. The Wireless Industry is Committed to Offering Broadband Services That Protect Consumer Privacy and Security, but Those Factors Are Irrelevant as Metrics for the Commission's Section 706 Analysis.

In the NOI, the Commission asks whether and how privacy and security concerns should be factored into the assessment of whether advanced telecommunications capability is being reasonably and timely deployed. As described below, the FCC need not consider privacy and security as part of its Section 706 analysis, and to the extent that it does, mobile broadband provider's practices have facilitated rapid deployment and adoption of broadband services.

The Commission has previously suggested that privacy and security concerns can affect consumer adoption of broadband, but it has never expressly reached such a finding; instead, it merely has hypothesized the existence of a *correlation* between privacy concerns and the non-adoption of broadband.[103] Yet, even this correlation does not withstand scrutiny because the Commission's analysis ignores significant consumer adoption and use of edge provider services, such as search engines and social networking services, that collect, use, and share massive amounts of consumers' personal data.

One study concluded that from 2011 to 2015, "the use of online activities, even ones involving sensitive information, continues to *increase*," and, "despite their privacy concerns, people *increasingly* engage in online activities that might involve sensitive information, like financial transactions and shopping."[104] Thus, as CTIA previously highlighted to the

[103] NOI ¶ 55.

[104] Scott J. Wallsten, *No, the NTIA's Survey Data Do Not Show a "Tipping Point" in Behavior Due to Privacy Concerns*, TPI Blog (May 15, 2016),

Commission, in the absence of reliable data, the Commission should not make speculative or arbitrary assumptions about the relationship between privacy and broadband adoption that may, in fact run counter to actual consumer preferences and practices.[105]

Instead, considering the impact of the Commission's proposed privacy regulations on broadband deployment is more relevant to the Commission's Section 706 analysis. Specifically, ISPs are the new entrants to the Internet advertising market and have thus far lagged behind other entities in this ecosystem in their uses of information for advertising and marketing purposes. Still, CTIA's ISP members proactively publish privacy policies that detail significant information about the companies' data practices, including the type of information collected, how it is used, and with whom and under what circumstances it is shared.[106] CTIA and its members understand that protecting the privacy and security of customers' data is not just a legal obligation: it makes good business sense. Thus, to the extent that the Commission wishes to consider privacy in its Section 706 analysis, it should focus on the extent to which its proposed broadband privacy rules threaten broadband investment and deployment.

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https://techpolicyinstitute.org/2016/05/15/no-the-ntias-survey-data-do-not-show-a-tipping-point-in-behavior-due-to-privacy-concerns/ (emphases added).

[105] Comments of CTIA, WC Docket No. 16-106 at 65-71 (filed May 26, 2016).

[106] *See, e.g.*, AT&T, AT&T Privacy Policy, https://www.att.com/gen/privacy-policy?pid=2506 (last visited Sept. 5, 2016); Verizon, Privacy Policy, http://www.verizon.com/about/privacy/privacy-policy-summary (last visited Sept, 5, 2016); Sprint, Legal/Regulatory & Consumer Resources, Privacy Policy (July 22, 2016), https://www.sprint.com/legal/privacy.html; T-Mobile, T-Mobile Privacy Policy Highlights (Nov. 25, 2015), http://www.t-mobile.com/company/website/privacypolicy.aspx.

D. The Commission Should Not Rely on Measuring Mobile Broadband America Data.

In the last Report and in the NOI, the Commission relied on Form 477 data regarding mobile broadband deployment, and is proposing to do so again,[107] but also seeks comment on use of MMBA data for various purposes.[108] CTIA, in a joint letter with the Competitive Carriers Association (CCA), has raised numerous significant concerns about the validity and usefulness of the MMBA data.[109] Based on similar objections, CTIA also has pointed out that a safe harbor based on MMBA participation would be meaningless and inappropriate in the Open Internet transparency context.[110] The problems with the MMBA program and data also make it a poor choice for the Commission's Section 706 analysis.

The data collected through the MMBA program paints an inaccurate picture of wireless network performance—particularly for those providers with a large base of non-Android customers and non-exempt, non-nationwide carriers. For example, because the Commission decided to include only tests from Android devices in the upcoming MMBA Report, the Report will exclude data collected from all iPhones—which represent approximately 40 percent of the U.S. smartphone market.[111] Moreover, because the type of device is a relevant variable affecting mobile network performance, the MMBA Report limiting test results to Android devices will result in an incomplete and imprecise representation of network performance.

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[107] NOI ¶ 62.

[108] NOI ¶¶ 48, 70.

[109] CTIA and CCA Joint Letter, GN Docket Nos. 12-264 and 14-28, WT Docket No. 16-137 (filed Aug. 10, 2016) (CTIA/CCA Joint Letter).

[110] CTIA Application for Review, GN Docket No. 14-28 (filed June 20, 2016).

[111] Philip Elmer-DeWitt, *About Apple's 40% Share of the U.S. Smartphone Market*, Fortune (Feb. 11, 2016), http://fortune.com/2016/02/11/apple-iphone-ios-share.

In addition, the MMBA program also produces an inaccurate picture of mobile performance because the program only attempts to measure performance of the four largest nationwide carriers. Other faults with the MMBA Report are equally troubling.[112] The FCC has decided to exclude manual speed test data from MMBA results. If the Commission elects to use data from the FCC speed test app, it should use all valid tests, regardless of whether the tests are scheduled or manual. Moreover, the MMBA program's filtering methods, which count some test results and discard others, raise significant questions and could exacerbate extant sampling problems. For example, CTIA understands that MMBA results will exclude data if it is missing location information, and there is little clarity as to how the program will address factors beyond the control of the operator that affect mobile Internet performance, such as differing capabilities of the handsets currently available in the market. The paucity of data assessed by the MMBA program and the opaque and troubling methodologies used to distinguish and filter accurate and reliable data thwarts carriers' efforts to investigate and verify the FCC's conclusions and raises doubts as to the utility of the entire MMBA program overall.

The FCC speed test app, moreover, pales in comparison to other more popular third-party applications, and reliance on MMBA results would be misguided. After months of operation, the FCC's app is only marginally used by the public and, as a result, collects only a very small number of tests per month. In fact, the MMBA program may lack data in many regions outside of major urban areas. This inadequate sampling of speed test data increases the need to aggregate at a yet unknown geographic level in order to obtain statistically valid results. By comparison, the data collected through Ookla's speed test app—just one example of an alternative commercial app that is popular among consumers—can provide anywhere from

[112] *See generally* CTIA/CCA Joint Letter.

roughly ten to approximately seventy-five times more completed tests in a given month than the FCC's app. Likewise, OpenSignal gathers data from millions of iPhones and Android devices, and other speed testing tools are available to consumers from RootMetrics, Google, M-Lab, and CalSPEED. Even the carriers themselves have access to third-party data sets that are far more robust than those obtained through the MMBA program, including data from Mosaik, RootMetrics, Nielsen, and P3. Quite simply, the Commission's entry into a field with many well established competitors has resulted in very low consumer utilization, statistically insignificant data collections, and potentially misleading speed test reporting. The Commission should not rely on MMBA results here.

In light of the extensive broadband service reporting to which wireless carriers already are subjected and the additional relevant data generated from these services, neither the MMBA data nor any additional reporting are necessary to support a finding that mobile broadband deployment is reasonable and timely. By way of example, wireless carriers must already detail their voice and broadband deployment on FCC Form 477. This reporting requires submission of coverage shapefiles that contain information about speed and mobile broadband network technology.[113] Additional reporting obligations would shed little light on the state of mobile wireless broadband deployment, and compliance costs would burden wireless providers, especially non-nationwide wireless carriers, and divert their resources away from additional broadband deployment.

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[113] *Modernizing the FCC Form 477 Data Program*, Report and Order, 28 FCC Rcd 9887, 9888 (2013); *Wireline Competition Bureau Releases Data Specification for Form 477 Data Collection*, Public Notice, 28 FCC Rcd 12665, 12671-72 (2013).

In sum, the evidence amassed by CTIA demonstrates that mobile wireless broadband deployment is reasonable and timely. As discussed above, carriers are investing heavily in their networks to deploy mobile broadband services that are faster and more effective for consumers. Investments by the U.S. wireless industry are particularly impressive when compared to investments around the globe. Consumers are, as a result, adopting mobile devices as their go-to communication choice for voice, text and data on an almost universal level. Given the available and recognized data demonstrating U.S. global leadership in mobile wireless broadband, unprecedented wireless provider network investments, and the incredible pace of consumer adoption and usage, the Commission must fairly conclude that mobile wireless broadband deployment is reasonable and timely.

III. TO PROMOTE CONTINUED DEPLOYMENT OF MOBILE BROADBAND, THE COMMISSION SHOULD FOCUS ON SPECTRUM, MOBILITY FUND SUPPORT, AND INFRASTRUCTURE.

As detailed above, the data show that mobile broadband deployment is reasonable and timely. There remain, however, a number of steps that the Commission should take to advance, in the mobile wireless context, the goal of Section 706 to broaden the availability of advanced communications capability.

A. Further Efforts to Free Additional Spectrum Are Crucial to Continued U.S. Global Leadership in Mobile Broadband.

The FCC, NTIA, and other agencies have done important work in last few years to make spectrum available for mobile broadband use, principally in this year's ongoing incentive auction. Despite these concerted actions, however, there remains an urgent need for the federal government to focus on identifying and getting additional spectrum into the pipeline for mobile broadband services. Additional efforts to identify more spectrum for licensed mobile broadband are vital to ensuring that the U.S. remains at the forefront of wireless broadband adoption and

deployment. This is particularly so given the long time frames that it typically takes to identify and reallocate spectrum.[114]

The Commission is, of course, well aware of the explosive growth in mobile broadband use and the need for additional spectrum to accommodate this ever-increasing usage.[115] Worldwide mobile data traffic was 65 percent higher in Q3 2015 than it was in Q3 2014, and there are no signs of this growth slowing.[116] Indeed, Ericsson projects that, by 2021, mobile broadband subscriptions will reach 7.7 billion globally.[117] It is also expected that significant 5G deployments will take place during this time and that, in North America, 95 percent of all subscriptions will be LTE or 5G by 2021.[118] As the U.S. mobile ecosystem increasingly

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[114] Thomas K. Sawanobori & Dr. Robert Roche, *From Proposal to Deployment: The History of Spectrum Allocation Timelines to Re-Allocate the Additional 350 MHz of Licensed Spectrum Needed by 2019, Policymakers Must Act Now*, http://www.ctia.org/docs/default-source/default-document-library/072015-spectrum-timelines-white-paper.pdf; See also Phil Goldstein, *CTIA: It takes 13 years, on average, to reallocate spectrum for carriers*, Fierce Wireless (July 21, 2015), http://www.fiercewireless.com/wireless/ctia-it-takes-13-years-average-to-reallocate-spectrum-for-carriers.

[115] *See generally* CTIA 18th Competition Report Comments; *see also* Letter from Scott Bergmann, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 15-125 (filed Aug. 11, 2015) (noting that mobile data traffic for North America increased more than 11-fold from 2010, that mobile data traffic is conservatively expected to grow six-fold by 2019, and that the spectrum deficit is expected to grow to 366 MHz by 2019); *Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy*, The Brattle Group 23 (May 11, 2015) (Brattle Group May 2015 White Paper) (finding that the economic value of the spectrum that is available to the mobile wireless industry is almost $500 billion); *Mobile Data Demand: Growth Forecasts Met* (finding that Americans use more than 11.1 billion MB of data every day).

[116] Ericsson, *Ericsson Mobility Report: On the Pulse of the Networked Society* 3 (Nov. 2015) (Ericsson Mobility Report) (noting that this growth was "largely driven by increased video consumption on mobile devices" and that "[a]part from mobile phones, there will also be a multitude of other connected devices communicating").

[117] *Id*. at 6.

[118] *Id*. at 9.

incorporates the Internet of Things, there will be an even greater need for additional network resources to accommodate new devices and their associated traffic.[119] As the Commission has acknowledged, it is essential that spectrum allocation and deployment keep pace with demand.[120] One group estimated that, to meet America's growing demand for mobile broadband, the wireless industry will need more than 350 megahertz of new licensed spectrum by 2019.[121] With these spectrum challenges on the horizon, the Commission should continue to take the lead in identifying ways to clear spectrum of all frequencies to support wireless broadband data and, eventually, 5G.

CTIA supports the Commission's efforts to make available additional millimeter wave spectrum for mobile uses in the ongoing *Spectrum Frontiers* proceeding.[122] As wireless services advance and lower-frequency spectrum resources dwindle, it will be necessary for the Commission to explore the use of higher-frequency bands for mobile services. In fact, bands above 24 GHz may be particularly well suited for the provision of 5G services. While these frequencies had "historically been considered unsuitable for mobile applications," technological advances have the capability to "unlock[] the potential of using [millimeter wave] bands for mobile uses in a way that meets the need for flexible access to spectrum to improve bandwidth in

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[119] *Id*. at 3 ("Out of a total forecast of 28 billion connected devices—more than 15 billion will be Machine-to-Machine (M2M) and consumer electronic devices by 2021.").

[120] *See, e.g.*, *Amendment of the Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, 30 FCC Rcd 3959, ¶¶ 9-14 (2015).

[121] Coleman Bazelon & Giulia McHenry, *Substantial Licensed Spectrum Deficit (2015-2019): Updating the FCC's Mobile Data Demand Projections*, The Brattle Group 6-7 (June 23, 2015), http://www.ctia.org/docs/default-source/default-document-library/brattle_350MHz_licensed_spectrum.pdf.

[122] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95, FCC 16-89 (rel. July 14, 2016).

constrained geographies."[123] Nevertheless, there remain significant challenges in putting these frequencies to use. As the Commission observed in the *Spectrum Frontiers* NPRM, "given the nascent state of technology" in higher frequency spectrum, "it will take substantially longer to deploy these systems than in lower frequency bands."[124]

Accordingly, the Commission should note that the use of millimeter wave spectrum will be complementary to, and not a replacement for, use of additional spectrum below 6 GHz. CTIA therefore urges the Commission to continue examining mid- and low-band spectrum that can be reallocated for mobile broadband and to ensure a robust spectrum pipeline at all frequencies. Spectrum below 3 GHz will remain necessary to support more traditional broadband applications and provide consumers with network coverage, while medium-band spectrum (3 to 24 GHz) will be needed to supplement capacity and coverage for 5G services. For consumers to have a seamless 5G mobile experience, networks will need access to frequency bands above *and* below 24 GHz, those below 6 GHz and, in particular, bands below 3 GHz because they have better propagation characteristics and, for the foreseeable future, will be more advantageous for macro network coverage and capacity. Accordingly, the Commission should note that the complementary use of millimeter wave spectrum will not be a sufficient replacement for spectrum below 6 GHz. Thus, CTIA encourages the Commission to continue its ongoing examination of spectrum bands above and below 24 GHz as potential homes for mobile services.

[123] *Id.* ¶ 5.

[124] *Id.* ¶ 212.

B. The Commission's Universal Service Policies Should Reflect American Consumers' Preference for Mobile Services By Implementing a Fully Funded Mobility Fund Phase II and Ensuring that its Other Universal Service Policies are Equitably Applied to Mobile Broadband Services.

The data in these comments unquestionably show that American consumers prefer mobile services. In addition, wireless consumers support nearly half of the $8.5 billion in annual USF contributions, while less than a quarter is allocated to support wireless services.[125] The Commission's universal service policies should reflect consumers' preference for mobile wireless services by appropriately sizing the budget for a permanent Mobility Fund Phase II and avoiding universal service policies that disfavor mobile broadband services.

As demonstrated above, expanding the coverage of 4G LTE networks has brought increasing mobile wireless broadband speeds and capacities to communities across the nation. Nevertheless, CTIA continues to believe that a robust and permanent Mobility Fund is necessary to ensure the most advanced mobile wireless broadband technologies are available throughout the U.S. While CTIA encourages the Commission to consider whether the currently available data are sufficient to identify areas that should be eligible for Mobility Fund Phase II, CTIA urges the Commission to move forward to implement a fully funded and permanent Mobility Fund Phase II.

In addition, despite consumers' demonstrated preference for mobile broadband services, some recent Commission universal service decisions seem to reflect an incongruous bias in favor of fixed broadband services. To the extent the Commission concludes that mobile wireless broadband deployment is not reasonable and timely in this proceeding, the Commission's current universal service policies that favor fixed services will not serve to address that perspective.

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[125] USAC, 2015 Annual Report, *Building the Foundation*, March 2016, *available at* https://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2015.pdf.

For example, the Commission's decision to require a special cost-effectiveness showing before E-rate applicants can select mobile broadband services imposes an unnecessary restriction on mobile providers participating in the E-rate program.[126] Many schools and libraries consider mobile wireless communications services to be essential to their educational missions, and the Commission's rules should not interfere with their ability to choose wireless services where such services would bring them the most benefit.

Similarly, the Commission's recent efforts to reform the Lifeline program to support broadband did not adequately consider affordability in the long-term benchmarks for mobile wireless broadband services.[127] The Commission failed to engage in any meaningful analysis of whether the long-term mobile broadband usage standards would result in affordable Lifeline plans, and in fact the record evidence indicates that they will not. To address this issue, the Commission should grant CTIA's petition for reconsideration of the 2016 Lifeline Modernization Order to ensure low-income consumers can access mobile broadband services beyond 2018.[128]

To continue the reasonable and timely deployment of mobile broadband services, the Commission's universal service policies should better reflect consumer preferences for mobile wireless services.

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[126] *Modernizing the E-Rate Program for Schools and Libraries*, Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 8870 (2014).

[127] *Lifeline and Link-Up Reform and Modernization; Telecommunications Carriers Eligible for Universal Service Support; Connect America Fund*, WC Docket Nos. 11-42, 09-197, and 10-90, Third Report and Order, Further Report and Order, and Order on Reconsideration, 31 FCC Rcd 3962, 3995 ¶ 94 (Apr. 27, 2016).

[128] CTIA Petition for Reconsideration, WC Docket Nos. 11-42, 09-197, and 10-90 (filed June 23, 2016).

C. The Commission Should Continue to Facilitate the Deployment of Wireless Infrastructure.

Wireless providers are aggressively competing to offer existing and potential customers new capabilities, and they continue to deploy additional infrastructure to make their networks sufficiently robust to support the ever-increasing demands of consumers for anytime, anywhere high-speed and high-capacity connectivity. In fact, a recent report predicts the inventory of U.S. cell sites will rise to about 362,269 cell sites in 2019.[129]

Meanwhile, wireless carriers have begun to rely on an array of wireless infrastructure technologies to densify their networks and meet consumers' growing need for connectivity. 5G networks, in particular, will require construction of a vast network of small cells and distributed antenna systems (DAS), but a web of federal, state, and local regulation stands as a looming barrier to timely and cost-effective deployment. While Congress, the FCC, and state and local partners have taken important steps to remove these impediments and speed local siting and environmental review—including through the recent Amended Collocation Agreement to streamline Section 106 review for DAS and small cell facilities—obstructions remain. Exploiting twenty-first century engineering marvels and technological breakthroughs in spectrum efficiency could still be frustrated by decades-old bureaucratic roadblocks. The FCC should therefore take additional steps to expedite local siting review, facilitate antenna siting on federal, tribal, and private lands, streamline environmental and historic preservation review, and improve access to poles and rights of way. The Commission should also encourage its federal, state, local, and tribal partners to likewise explore opportunities to streamline wireless infrastructure deployment so that high-speed 4G LTE and 5G networks can be rapidly and

[129] *June 2015 Brattle Report* at 12-13.

efficiently deployed across the country.

D. The Commission Should Not Adopt Rules in the Broadband Privacy Rulemaking That Will Place More Prescriptive Obligations on ISPs than Others in the Broadband Ecosystem.

For decades, the Federal Trade Commission (FTC) has governed the Internet ecosystem under a coherent framework that fairly balances the technological capabilities of broadband infrastructure with the business needs of industry members and the privacy interests of consumers. The FCC's proposed privacy framework would unjustifiably impose onerous obligations on ISPs, while leaving edge providers (*e.g.*, search engines, ad networks, and social media platforms), which often collect and use more personal information than ISPs,[130] regulated under the FTC's flexible and technology-neutral framework, creating an asymmetric regulatory regime that will confuse consumers and restrict ISPs' ability to serve customers' needs through innovative data programs and services.

An asymmetric regulatory framework, under which ISPs are subject to different rules than edge providers that use the same information for the same commercial purposes, will harm consumers in several ways. In addition to simply confusing users by requiring them to respond to frequent and intrusive consent requests, the FCC's proposed rules would deprive consumers of targeted advertising that they may want and find useful, while allowing edge providers unfettered ability to engage in similar targeted advertising. The proposed rules would also impose tremendous costs on providers while simultaneously depriving them of the ability to make innovative uses of information. The FCC's proposals also may impede competition by

[130] *See* Peter Swire et al., *Online Privacy and ISPs: ISP Access to Consumer Data is Limited and Often Less than Access by Others*, Inst. for Info. Sec'y & Pol'y, Georgia Tech., Feb. 2016, http://peterswire.net/wp-content/uploads/Online-Privacy-and-ISPs.pdf; Doug Brake, *Why Broadband Discounts are Pro-Consumer*, Info. Tech. & Innovation Found., Georgia Tech. at 2, (Aug. 2016), http://www2.itif.org/2016-broadband-discounts-pro-consumer.pdf (Brake).

dissuading or preventing ISPs from offering new and innovative services, such as home alarm systems, online entertainment platforms, and health-monitoring services, to rival those offered by edge providers.

Importantly, as addressed further below, the Commission also is considering prohibiting the ability of consumers to receive a discount on broadband service in exchange for personalized advertising. Such offerings not only mirror much of the online services that consumers expect and enjoy, they can lead to significant cost savings for all consumers, enable ISPs to offer more valuable services, and actually promote broadband adoption by making services more affordable. The FCC would thus undermine the goal of broadband deployment by depriving consumers of enhanced functionalities and lower-cost services.[131]

Further, with respect to harmonization, domestic and international policy developments call for privacy rules that mandate equal treatment of broadband companies and other companies operating on the Internet. The Obama Administration carefully highlighted the need for consistency in its 2012 Privacy Blueprint and Consumer Bill of Rights.[132] The U.S. government reinforced this stance in its EU Privacy Shield negotiations, maintaining that the FTC standard, in combination with law focusing on sensitive data where appropriate and robust enforcement, provides strong protection for consumers. A different FCC standard regulating only a subset of companies handling Internet data will undermine the U.S. government's advocacy.[133]

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[131] CTIA Privacy Comments, WC Docket No. 16-106 at 1-2 (filed May 26, 2016).

[132] *See* The White House, *Consumer Data Privacy in a Networked World: A Framework for Protecting Privacy and Promoting Innovation in the Global Digital Economy* at 37-38, Feb. 2012, https://www.whitehouse.gov/sites/default/files/privacy-final.pdf.

[133] CTIA Privacy Comments at 65-71.

For all of these reasons that show privacy concerns have not had a negative impact on broadband deployment, the Commission should not consider privacy in its Section 706 analysis. To the extent it does so, it should focus on the negative impact its rules could have on broadband investment and deployment.

E. The Commission Should Not Adopt Policies that Will Restrict Providers' Ability to Deploy Innovative Data Offerings.

As discussed above, free data programs and data allowances promote greater choice, more data use, and more innovation in the broadband market by offering consumers a range of mobile plans at different price points; giving consumers, network operators, and content providers incentives to use mobile wireless capacity efficiently; expanding access to broadband by closing the digital divide; and supporting new apps and services. As previously noted, former FCC Chief Economist Bill Rogerson has concluded that free data services create no significant economic concerns and benefit subscribers.[134]

Recent Commission inquiries into these offerings, *e.g.*, including whether to permit "financial inducements" and related proposals in the broadband privacy NPRM to restrict data allowances, threaten this vibrant source of competition. Broadband providers offering a discount for access to user data is not different from discounted services commonly enjoyed online and elsewhere.[135] Discounts in various forms provided in exchange for user data is a fundamental premise of many online services. In the familiar "freemium" model, companies looking to scale will offer one version of their product for free, *i.e.*, in exchange for user data, and an enhanced version for a fee. Free webmail, free social networking, and free search are just a few of the

[134] Rogerson at 25-29.

[135] Brake at 5; Rogerson at 25.

most obvious examples of this familiar and time-tested trade-off.[136] Even the FCC concedes that "it is not unusual for consumers to receive perks in exchange for use of their personal information" in both "the bricks-and-mortar world" of consumer loyalty programs and in the broadband arena where "'free' services in exchange for information are common."[137]

As the Pew Research Center observed in a recent report, "[m]any Americans are willing to share personal information in exchange for tangible benefits" because "most Americans see privacy issues in commercial settings as contingent and context-dependent."[138] Conversely, a total ban on consumer choice when it comes to accepting discounts in exchange for data, like the one proposed by Open Technology Institute ("OTI"), is rooted in a parochial view towards personal data, which is a fundamentalist outlook, and which should not be imposed on consumers who do not share that outlook.[139] Consistent with the position of the Pew Research Center, FTC Commissioner Ohlhausen urged the FCC not to flatly ban "discounts for ad-supported BIAS" because that action would:

> "prohibit[ ] a consumer from trading some of her data for a price discount, even if the consumer is fully informed. Would-be broadband subscribers cite high cost as more important than

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[136] Brake at 5.

[137] *See Protecting the Privacy of Consumers of Broadband and Other Telecommunications Services*, Notice of Proposed Rulemaking, 31 FCC Rcd 2500 ¶ 260 (2016); Brake at 7 ("Nearly 90 percent of U.S. shoppers at all income levels happily use some kind of loyalty discount card").

[138] Brake at 4; Lee Rainie & Maeve Duggan, "Privacy and Information Sharing" (Pew Research Ctr. Internet, Science & Tech, January 14, 2016), http://www.pewinternet.org/2016/01/14/privacy-and-information-sharing. *See also* Alan F. Westin, Nat'l Telecom. & Info. Admin. (NTIA), *'Whatever Works' The American Public's Attitudes Toward Regulation and Self-Regulation on Consumer Privacy Issues* 1, *in* Privacy and Self-Regulation in the Information Age (1997), https://www.ntia.doc.gov/page/chapter-1-theory-markets-and-privacy (last visited Aug. 29, 2016).

[139] Comments of Open Tech. Inst., WC Docket No. 16-106 (filed May 26, 2016).

> privacy concerns for the reason why they have not adopted broadband. Given that fact, such a ban may prohibit ad-supported broadband services and thereby eliminate a way to increase broadband adoption."[140]

In light of the risk that rules under consideration by the FCC could undercut adoption, one of the primary objectives of Section 706, the FCC should take into account the FTC's views before regulating broadband discount programs. In markets where consumers have choices among broadband providers and the terms of the discount program "are transparent and fairly disclosed," the FTC believes that "such choice options may result in lower prices or other consumer benefits, as companies develop new and competing ways of monetizing their business models."[141] Allowing these differentiated pricing programs to go forward recognizes that customers are competent to decide where they stand on these trade-offs. Many consumers, of all income levels, will choose to save money. Effective notice and choice should continue to be the guiding light when it comes to privacy discounts, not flat bans.[142] Rather than regulating wireless carriers' pricing plans, the Commission should instead support these innovations as part of a healthy, competitive wireless market.

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[140] Comment of Comm'r Maureen Ohlhausen, FTC, WC Docket No. 16-106 at 3 (filed May 27, 2016) (Ohlhausen Statement), https://www.ftc.gov/system/files/documents/public_statements/951923/160527fccohlhausenstmt1.pdf, *citing* FTC, *Big Data: A Tool For Inclusion Or Exclusion? Understanding The Issues* (Jan. 2016), https://www.ftc.gov/reports/big-data-tool-inclusion-or-exclusion-understanding-issues-ftc-report. The FTC has not found broadband discount programs to be problematic, Ohlhausen said; rather, the Big Data Report referred to qualms raised by some participants in FTC workshops but also noted that such programs "can create opportunities for low-income and underserved communities." *Id.*

[141] *Id.*

[142] Brake at 5.

IV. CONCLUSION.

By any measure, mobile broadband deployment is reasonable and timely. The vibrant, robust U.S. wireless market is a global leader in 4G LTE deployment and is rapidly working to develop and deploy 5G technology. Demand for wireless connections, innovative service offerings, and high-quality devices continues to increase as wireless carriers continue to invest in their networks and compete to offer more flexibility, more functionality, and more choice. These facts and the data provided in CTIA's comments permit no other conclusion than that mobile broadband deployment is reasonable and timely.

To ensure the U.S. maintains leadership in mobile wireless broadband throughout the world, the FCC should take important steps to continue to reduce barriers to the deployment of wireless infrastructure, establish a robust and permanent Mobility Fund for rural areas, and facilitate the auction and deployment of new spectrum to meet growing consumer demand. As the imminent deployment of 5G adds even more competitive fervor to the wireless marketplace, CTIA believes the information it has provided in these comments requires an FCC finding that mobile wireless advanced telecommunications capabilities have been reasonably and timely deployed.

Respectfully submitted,

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